

APPENDIX

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

WELL DRILLER REGISTRATION

AND

FILING OF WELL COMPLETION REPORTS



MANUAL ON

WELL DRILLER REGISTRATION

AND

FILING OF WELL COMPLETION REPORTS

prepared by

Massachusetts Department of Environmental Management

**Office of Water Resources
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January 1998

MANUAL ON WELL DRILLER REGISTRATION AND FILING OF WELL COMPLETION REPORTS

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INTRODUCTION

This manual serves as a ready reference for well drillers to use in complying with Massachusetts General Law Chapter 21 Section 16 on well driller registration and filing of well completion reports. The manual is designed to assist well drillers in meeting requirements contained in state regulations 313 CMR 3.00 (as amended in 1997), which have been promulgated for state administration of the enabling law. The manual is divided into three main sections--the first deals with registration requirements, the second focuses on registration responsibilities, and the third provides instructions for filling out and submitting well completion reports.

REGISTRATION REQUIREMENTS

If you *engage in the business* of drilling wells in Massachusetts, the law requires you to be registered with the Department of Environmental Management / Office of Water Resources. The purpose of this registration requirement is to establish a system of accountability within the General Court's broad mandate to the Department, which is to protect, conserve, and control the Commonwealth's natural resources, including underground waters. The Department's jurisdiction over wells includes driller registration, data collection, and support of a municipality in exercising its authority over health issues, such as locating and constructing a well. This division of authority is of utmost importance to you, as you **must** comply not only with state requirements, but also with those of the municipality in order to retain the privilege of well driller registration in Massachusetts. These multiple requirements are discussed more fully under the second section on "Registration Responsibilities."

The General Court granted authority to register (or license) well drillers *not to individual municipalities*, but only to the Department. The purpose in doing this was to provide a uniformity across the state in both qualifications and enforcement. Therefore, you only have to register once on an annual basis at the state level, and the Department then notifies municipalities of those who are authorized to engage in the business of drilling wells in all municipalities. As stated in the enabling law, a municipality does not have the authority to duplicate the Department's registration (or licensing) function.

Engaging in the business of drilling wells refers to **ALL** types of wells, including both productive (water producing) and nonproductive (observation or monitoring). If your drilling business involves only nonproductive wells, the Department has established qualifications for this type of work, but by being so registered, your ability to do business is accordingly restricted. The letter "M" appears as an integral part of your registration number (i.e., 926M), and your registration certificate contains the phrase, "authorized to dig or drill **MONITORING WELLS ONLY**".

Engaging in the business of drilling wells is interpreted in a broad legal sense, meaning that you must be *registered to advertise for hire*, even before you actually perform any drilling work. It also means that, in order for a firm to engage in the well drilling business in Massachusetts, the firm must have a person registered who is accountable for the firm's well drilling activities by having a principal financial interest in the firm. Depending upon the amount of well drilling work the firm performs in the state, more than one person may need to be registered, as discussed under the section on "Registration Responsibilities".

On the issue of *constructing one's own well*, state law is silent, as it focuses on engaging in the business. This would appear to imply that a property owner can install one's own private water supply well without being registered, as long as the municipality approves the health and safety implications of such an activity. However, to maintain authority over business use of equipment, state law does limit to a registered well driller the use of any type of drilling equipment. The Department must issue a *well rig permit* to a registered well driller in order for that equipment to be used in Massachusetts. Thus, it would be very difficult for a property owner to construct a well and comply with state and municipal requirements without engaging a registered well driller.

This means that you, as a registered well driller, **MUST** obtain from the Department a *permit to use a well drilling rig* of any type in the state. The only exception is a nonproductive well installation tool where the tool is used for sampling purposes, and is not left in the ground for more than 48 hours.

REGISTRATION RESPONSIBILITIES

Should you be engaged to drill a well in Massachusetts, your first order of business is to *make certain that a municipal well permit has been obtained*, where required. If you need proof of being registered when applying for a permit, use your signed certificate of registration. Some municipalities do allow a registered well driller to obtain the permit, others require the property owner to do this. In either case, **YOUR RESPONSIBILITY** is to make sure that municipal requirements have been complied with by either you or the property owner, **BEFORE YOU START THE DRILLING OPERATION**. If for any reason you neglect to do this, you are held accountable and you risk the loss of your registration to engage in the well drilling business in the state.

The second order of business you must attend to is assigning a registered well driller to *provide immediate field supervision* at required times during the drilling operation. These required times are:

- drilling startup to make certain that location is correct and proper safety measures are taken,
- setting of casing,
- installing the protective well seal, and
- testing for well yield.

The registered well driller providing immediate field supervision can be either you or an assigned firm employee who is registered. Whoever assumes this responsibility is accountable to the municipality and to the state as a representative of the firm for having the well meet health and safety requirements. Either you or your firm may be required to provide a certificate of insurance or a contractor's performance bond as a condition for doing work in a municipality, and such a requirement will have to be met before obtaining a well permit.

Make certain that any *advertising* done in the state for use of your well drilling services contains your name and your registration number. This includes advertising by a company or corporation for whom you work. Also, the well rig you use must have affixed to it a state permit, which is obtained from the Department at the time you obtain your certificate of registration. The identification card for the well rig is to be carried on the rig at all times for identification purposes by municipal or state officials. Because well rigs can only be used in Massachusetts by registered well drillers, the identification card will list your name, or another person employed by the firm who is registered.

The enabling law requires you to *renew your registration annually*. To assist you with this, each year on May 15th the Department sends to you (at your home address) a renewal form with data from the previous year's application, such as address, employer, or well rigs being used. You are to make any changes as needed on the application, provide a total count of the wells you drilled in the state during the current registration period, and return before June 30th with the annual registration fee. If the application is received by the Department after that date, you must submit a late fee before the application will be processed.

Because of the industry's high rate of job turnover, the Department has adopted the policy of *sending to the home address* all material pertaining to registration provided on the application. In order to keep the Department's records current, you are responsible for notifying the Department of any address or employment changes. Unless this is done, you risk not having your registration renewed in a timely fashion, as well as having to pay the added fee for late registration.

WELL COMPLETION REPORT

[illegible]

Please print firmly

DRILLER COPY

			Signature of supervising registered well driller

Please print firmly

BOARD OF HEALTH COPY

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INSTRUCTIONS FOR FILLING OUT AND SUBMITTING WELL COMPLETION REPORTS

If you are listed on a municipal well permit as the well driller providing immediate field supervision, you are responsible for complying with the enabling law on submitting a well completion report. Within thirty days of completing the well, you must submit to the Department a report containing specified information about the well, with a copy to the municipal board of health. Completing a well means you have met requirements of the business contract engaging you to drill the well, you have complied with municipal requirements on the well permit, and you have obtained necessary well data for the well completion report.

To simplify the reporting process, the Department furnishes you with a carbonless three part form. The top form (original) is for your records, the second is the blue copy which you provide to the board of health (by mail or other means), and the third (manila card, self mailer) is sent to the Department. You are to submit one three part form for any work done to construct or alter a productive well hole, shaft, or casing. This includes drilling, digging, deepening, or abandoning.

For nonproductive wells (**MONITORING WELLS**), if more than one well is located at a site, and if subsurface characteristics are similar, only one well completion report is required. You should provide well data for the deepest well, and make note in the "Comments" block in the middle of the form how many monitoring wells were drilled at the site. However, you should be aware that some boards of health require you to submit a blue copy of the form for each monitoring well drilled in the municipality. Check on this when applying for a well permit.

Detailed instructions follow on filling in the major blocks on the well completion report.

WELL LOCATION

Address: Provide street address (including house number, if available) or subdivision name and lot number of the location of the well being drilled. If neither of these are available, use the two lines to provide specific information that will enable anyone to locate the well site.

Well Owner: Give full name of individual or corporate owner. For monitoring well drillers, this information may be confidential--if so, substitute with the client's name and address. Write "client" over the heading "Well Owner".

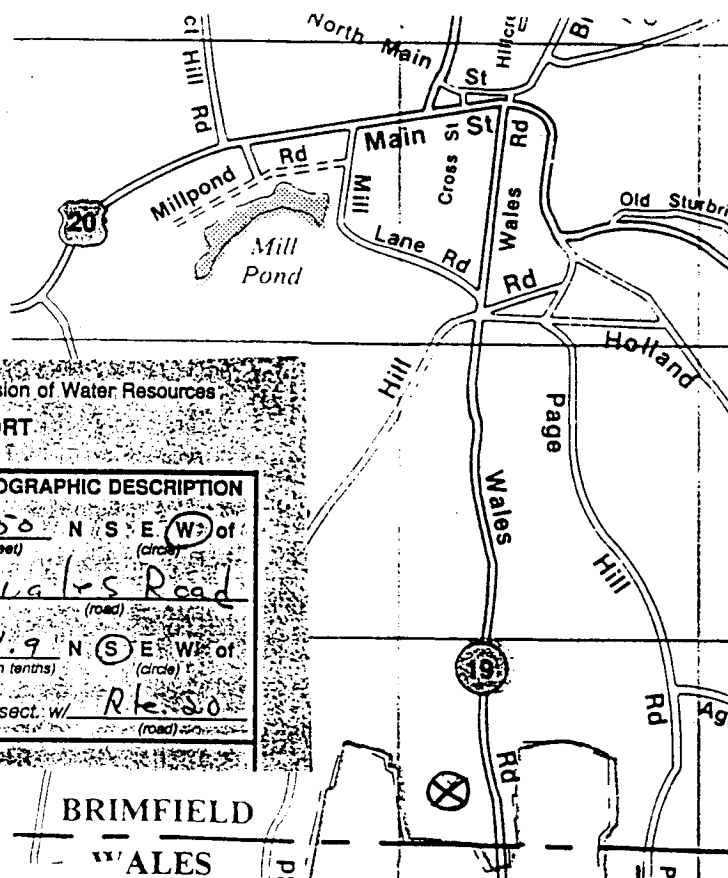
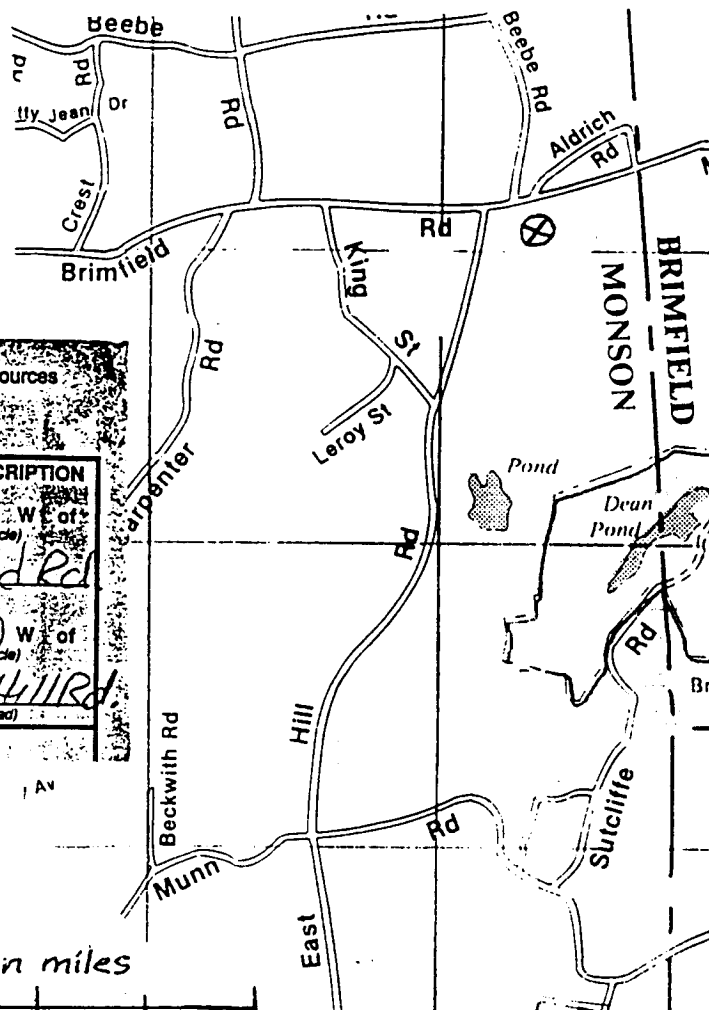
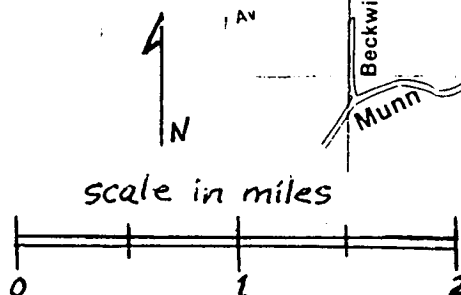
Owner Address: If owner address is the same as the well location, write "SAME AS ABOVE"; otherwise, provide the owner's complete address.

EXAMPLES FOR FILLING IN GEOGRAPHIC DESCRIPTION

Department of Environmental Management/Division of Water Resources
WELL COMPLETION REPORT

WELL LOCATION	GEOGRAPHIC DESCRIPTION
Address: <u>Lot #5 Brimfield Rd</u>	<u>50' N S E W of</u> (feet) (circle) <u>Brimfield Rd</u> (road)
City/Town: <u>Monson</u>	<u>1/10 N S E W of</u> (mi. in tenths) (circle)
Well owner: <u>[Redacted]</u>	intersect. w/ <u>East Hill Rd</u> (road)
Address: <u>140 Beckwith Rd</u> <u>Monson, MA 01057</u>	

⊗ Location of well
in each example



Department of Environmental Management/Division of Water Resources
WELL COMPLETION REPORT

WELL LOCATION	GEOGRAPHIC DESCRIPTION
Address: <u>174 Wales Road</u>	<u>150' N S E W of</u> (feet) (circle) <u>Wales Road</u> (road)
City/Town: <u>Brimfield</u>	<u>1.9 N S E W of</u> (mi. in tenths) (circle)
Well owner: <u>[Redacted]</u>	intersect. w/ <u>Rte 50</u> (road)
Address: <u>174 Wales Rd</u> <u>Brimfield, MA</u>	

Board of Health permit: Check the appropriate box--'yes'-- if you or the owner has obtained a permit, or the box-- 'no'-- if the town does not require a permit. If neither box is checked, the Department then assumes that you have NOT obtained a permit before proceeding with the drilling operation.

Geographic Description: To ensure that the proper location and road are selected for mapping purposes, the Department needs a description of where the well is located in relation to an adjacent road. The first item locates the well (in feet) from the road-- an estimate within 10 feet is sufficient. This distance can be obtained directly from the well permit, or by pacing the distance (2 1/2 or 3 feet per pace). Circle the orientation FROM the the road to the well. For example--if the well is east of the road, circle E. If northeast, be more precise by circling both N and E. Locate this road in relation to an intersecting road by using your vehicle odometer to measure the road distance in tenths of a mile. This can be done when driving to or leaving the site. Please remember to record this mileage, along with the name of the intersecting road and the orientation FROM this road looking back along the first road (the one adjacent to the well).

WELL USE

Check the appropriate box. If the well is to be used for purposes other than noted, such as heat pump or irrigation, check "other" and write in what the well is to be used for.

METHOD DRILLED/DATE DRILLED

Write in the method used, such as cable tool, auger, mud, air hammer, rotary, percussion, jet, driven point, probe, or other description as appropriate.

CASING

Type: Write in the casing material used, such as steel, thermoplastic, concrete, along with the specific type, such as 17 lb., or Schedule 80.

Length/Diameter: (self explanatory)

Length into bedrock: Write in the length of casing which has penetrated into bedrock.

Protective well seal: Check box if grout was used, as recommended by Dept. of Environmental Protection, or write in the type of seal used, such as drive shoe.

WELL: COMPLETION REPORT

WELL LOCATION Address <u>L OT 260</u> <u>MANCHAU RD</u> City/Town <u>SUTTON</u> Well owner <u>MANCHAUG</u> Address <u>104 PLEASANT ST</u> <u>SOUTH CHARLTON</u>			GEOGRAPHIC DESCRIPTION: <u>50 N 3 E W of</u> <u>(feet) (circle)</u> <u>MANCHAUG</u> <u>(road)</u> <u>1 N S E W of</u> <u>(mi. in length) (circle)</u> Intersect. w/ <u>PARKER</u> <u>(road)</u>		
Boatd of Health permit obtained: yes <input checked="" type="checkbox"/> no <input type="checkbox"/> WELL USE Domestic <input checked="" type="checkbox"/> Public <input type="checkbox"/> Industrial <input type="checkbox"/> Monitoring <input type="checkbox"/> Other _____ Method drilled <u>AIR HAMMER</u> Date drilled <u>10-17-97</u> CASING Type <u>1 7/8 STEEL</u> Length <u>44</u> ft. Dia(I.D.) <u>6</u> in. Length into bedrock <u>10</u> ft. Protective well seal: Grout <input type="checkbox"/> Other <u>DRIVE SHAFT</u>			WELL DATA Total well depth <u>185</u> ft. Depth to bedrock <u>28</u> ft. Water-bearing rock/unconsolidated material: Description <u>GRAVELY HARD</u> Water-bearing zones: 1) From <u>170</u> To <u>171</u> 2) From _____ To _____ 3) From _____ To _____ Gravel pack well: dia. _____ Screen: _____ Slot# _____ length _____ from _____ to _____		
STATIC WATER LEVEL (all wells) Static water level below land surface <u>40</u> ft. Date <u>10-17-97</u>			WELL TEST (production wells) Drawdown <u>10.0</u> ft. after pumping <u>4</u> hr. <u>0</u> min. at <u>5</u> gpm How measured <u>PUMP</u> Recovery <u>to 40</u> ft. after <u>3</u> hr. <u>0</u> min. <u>SAVAP</u>		
LOG OF FORMATIONS			COMMENTS <u>WELL MAKES 15 GPM</u>		
Materials From To <u>CLAY</u> <u>GRAVEL 0 28'</u> <u>ROCK 28 185'</u>			Driller <u>STEVE KAPOKIAN</u> Firm <u>CHARLTON WELL</u> Address <u>R.T. 20</u> City/Town <u>CHARLTON</u> Supervising Driller Reg.# <u>56</u>		
			Signature of supervising registered well driller <u>Peter W. Vigeant</u>		

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WELL COMPLETION REPORT

WELL LOCATION Address <u>Box 10</u> <u>Westford St</u> City/Town <u>Dunstable</u> Well owner <u>Shawmut Corp</u> Address <u>PO Box 820</u> <u>7 Chelmsford St</u>	GEOGRAPHIC DESCRIPTION <u>50</u> N <u>S</u> E <u>(NW)</u> of <small>(feet)</small> <small>(corner)</small> <u>Westford St</u> <small>(north)</small> <u>0.4</u> N <u>S</u> E <u>W</u> of <small>(feet)</small> <small>(corner)</small> Intersect. w/ <u>Maple St.</u> <small>(north)</small>																								
Board of Health permit obtained: yes <input checked="" type="checkbox"/> no <input type="checkbox"/>	WELL USE Domestic <input checked="" type="checkbox"/> Public <input type="checkbox"/> Industrial <input type="checkbox"/> Monitoring <input type="checkbox"/> Other <input type="checkbox"/>																								
Method drilled <u>Air Rotary</u> Date drilled <u>2-18-97</u>	WELL DATA Total well depth <u>505</u> ft. Depth to bedrock <u>35</u> ft. Water bearing rock/unconsolidated material: _____ Description <u>Gravel</u> Water-bearing zones: 1) From <u>200</u> To <u>205</u> 2) From <u>330</u> To <u>345</u> 3) From <u>350</u> To <u>355</u> Gravel pack well: _____ dia. _____ Screen: _____ dia. _____ Slot # _____ length _____ from _____ to _____																								
CASING Type <u>176 JVC</u> Length <u>20</u> ft. Dia(I.D.) <u>6</u> in. Length into bedrock <u>205</u> ft.	Protective well seal: _____ Grout <input checked="" type="checkbox"/> Other <u>Dr. grade</u>																								
STATIC WATER LEVEL (all wells) Static water level below land surface <u>10</u> ft. Date <u>2-21-97</u>																									
WELL TEST (production wells) Drawdown <u>450</u> ft. after pumping <u>8</u> hr. <u>30</u> min. at <u>3 1/2</u> gpm Flow measured <u>purged</u> Recovery <u>10/10</u> ft. after <u>4</u> hr. _____ min.																									
LOG OF FORMATIONS <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Material</th> <th>From</th> <th>To</th> </tr> </thead> <tbody> <tr> <td>Clay & Silt</td> <td>0</td> <td>15</td> </tr> <tr> <td>Yellow Clay</td> <td>15</td> <td>30</td> </tr> <tr> <td>Hard Pan</td> <td>30</td> <td>45</td> </tr> <tr> <td>Black</td> <td>45</td> <td>68</td> </tr> <tr> <td>Dark Gray</td> <td>68</td> <td>105</td> </tr> <tr> <td>Black</td> <td>105</td> <td>117</td> </tr> <tr> <td>Gray</td> <td>117</td> <td>505</td> </tr> </tbody> </table>	Material	From	To	Clay & Silt	0	15	Yellow Clay	15	30	Hard Pan	30	45	Black	45	68	Dark Gray	68	105	Black	105	117	Gray	117	505	COMMENTS Driller <u>Richard C. Bacon</u> Firm <u>N.E. Wells & Pump Co.</u> Address <u>PO Box 90</u> City/Town <u>Dunstable</u> Supervising Driller Reg # <u>616</u> <u>Richard C. Bacon</u> <small>Signature of supervising registered well driller</small>
Material	From	To																							
Clay & Silt	0	15																							
Yellow Clay	15	30																							
Hard Pan	30	45																							
Black	45	68																							
Dark Gray	68	105																							
Black	105	117																							
Gray	117	505																							

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WELL COMPLETION REPORT

WELL LOCATION Address <u>From Jct W Chestnut Hill Rd & Ripley Rd take Ripley 0.2 on right</u> City/Town <u>Montague</u> Well owner <u>Montague</u> Address <u>Chestnut Hill Road</u> <u>Montague, MA 01351</u> Board of Health permit obtained: yes <input checked="" type="checkbox"/> no <input type="checkbox"/>		GEOGRAPHIC DESCRIPTION <u>108</u> (feet) <u>N</u> <u>S</u> <u>E</u> <u>W</u> of (circle) <u>Ripley Road</u> (road) <u>0.2</u> (mi. in tenths) <u>N</u> <u>S</u> <u>E</u> <u>W</u> of (circle) <u>W Chestnut</u> (road) Intersect. w/ <u>W Chestnut</u>										
WELL USE Domestic <input checked="" type="checkbox"/> Public <input type="checkbox"/> Industrial <input type="checkbox"/> Monitoring <input type="checkbox"/> Other <input type="checkbox"/>		WELL DATA Total well depth <u>375'</u> ft. Depth to bedrock <u>38'</u> ft. Water-bearing rock/unconsolidated material: Description <u>Quartz shale</u> Water-bearing zones: 1) From <u>360</u> To <u>375</u> 2) From <u> </u> To <u> </u> 3) From <u> </u> To <u> </u> Gravel pack well: <u> </u> dia. Screen: <u> </u> dia. Slot # <u> </u> length <u> </u> from <u> </u> to <u> </u>										
Method drilled <u>Air Hammer</u> Date drilled <u>11/3/97</u> CASING Type <u>17 lb Steel</u> Length <u>54</u> ft. Dia(I.D.) <u>6</u> in. Length into bedrock <u>16'</u> ft. Protective well seal: <u>Seal</u> Grout <input type="checkbox"/> Other <input type="checkbox"/>		STATIC WATER LEVEL (all wells) Static water level below land surface <u> </u> ft. Date <u>11/4/97</u> WELL TEST (production wells) Drawdown <u>375</u> ft. after pumping <u>4</u> hr. <u>0</u> min. at <u>12</u> gpm How measured <u>bucket</u> Recovery <u>OF</u> ft. after <u>0</u> hr. <u>0</u> min.										
LOG of FORMATIONS <table border="1"> <thead> <tr> <th>Materials</th> <th>From</th> <th>To</th> </tr> </thead> <tbody> <tr> <td>Gravel & Hardpan</td> <td>0</td> <td>38</td> </tr> <tr> <td>Bedrock</td> <td>38</td> <td>375</td> </tr> </tbody> </table>		Materials	From	To	Gravel & Hardpan	0	38	Bedrock	38	375	COMMENTS <u>Overflow @ 12 gpm</u> Driller <u>Kenneth C. Lynde</u> Firm <u>Lynde Well Drilling, Inc.</u> Address <u>RFD 4, box 799</u> City/Town <u>Brattleboro, VT 05301</u> Supervising Driller Reg.# <u>480</u> <u>Kenneth C. Lynde</u> Signature of supervising registered well driller	
Materials	From	To										
Gravel & Hardpan	0	38										
Bedrock	38	375										

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WELL LOCATION Address <u>River Road</u> City/Town <u>Conway Ma</u> Well owner <u>Attorney General</u> Address <u>G.L.L. Ma</u> Board of Health permit obtained: yes <input checked="" type="checkbox"/> no <input type="checkbox"/>		GEOGRAPHIC DESCRIPTION <u>150</u> (feet) <u>N</u> <u>S</u> <u>E</u> <u>W</u> of (circle) <u>River Rd</u> (road) <u>1</u> (mi. in tenths) <u>N</u> <u>S</u> <u>E</u> <u>W</u> of (circle) <u>Intersect. w/ TRUSS</u> (road)																
WELL USE Domestic <input checked="" type="checkbox"/> Public <input type="checkbox"/> Industrial <input type="checkbox"/> Monitoring <input type="checkbox"/> Other <input type="checkbox"/>		WELL DATA Total well depth <u>440</u> ft. Depth to bedrock <u>10'</u> ft. Water bearing rock/unconsolidated material: Description <u>Gray + white</u> Water bearing zones: 1) From <u>80</u> To <u>410</u> 2) From <u> </u> To <u> </u> 3) From <u> </u> To <u> </u> Gravel pack well: <u> </u> dia. Screen: <u> </u> dia. Slot # <u> </u> length <u> </u> from <u> </u> to <u> </u>																
Method drilled <u>Air Rotary</u> Date drilled <u>11-14-97</u> CASING Type <u>17 lb Steel</u> Length <u>80</u> ft. Dia(I.D.) <u>6</u> in. Length into bedrock <u>70'</u> ft. Protective well seal: <u>Drill 540'</u> Grout <input type="checkbox"/> Other <input type="checkbox"/>		STATIC WATER LEVEL (all wells) Static water level below land surface <u>15</u> ft. Date <u>12-1-97</u> WELL TEST (production wells) Drawdown <u>440</u> ft. after pumping <u>3.0</u> min. at <u>34</u> gpm How measured <u>Comp</u> Recovery <u>420</u> ft. after <u>3.0</u> min.																
LOG of FORMATIONS <table border="1"> <thead> <tr> <th>Materials</th> <th>From</th> <th>To</th> </tr> </thead> <tbody> <tr> <td>Gravel & Hardpan</td> <td>0</td> <td>10</td> </tr> <tr> <td>Gray Rock</td> <td>10</td> <td>187</td> </tr> <tr> <td>Water Lich</td> <td>187</td> <td>190</td> </tr> <tr> <td></td> <td>190</td> <td></td> </tr> </tbody> </table>		Materials	From	To	Gravel & Hardpan	0	10	Gray Rock	10	187	Water Lich	187	190		190		COMMENTS <u>Hydro Fraced</u> <u>Now Flow 5 GPM</u> Driller <u>M. K. Laroche</u> Firm <u>Kierke & Heusen Inc.</u> Address <u>130 Cunningham Road</u> City/Town <u>West Chesterfield Ma</u> Supervising Driller Reg.# <u>196</u> <u>Paul K. Laroche</u> Signature of supervising registered well driller	
Materials	From	To																
Gravel & Hardpan	0	10																
Gray Rock	10	187																
Water Lich	187	190																
	190																	

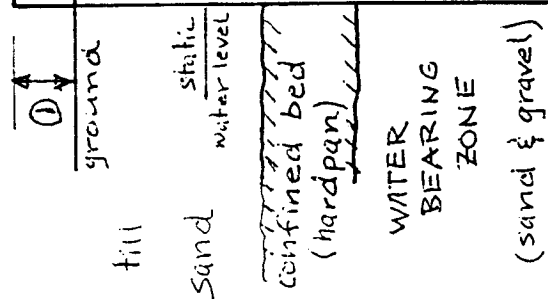
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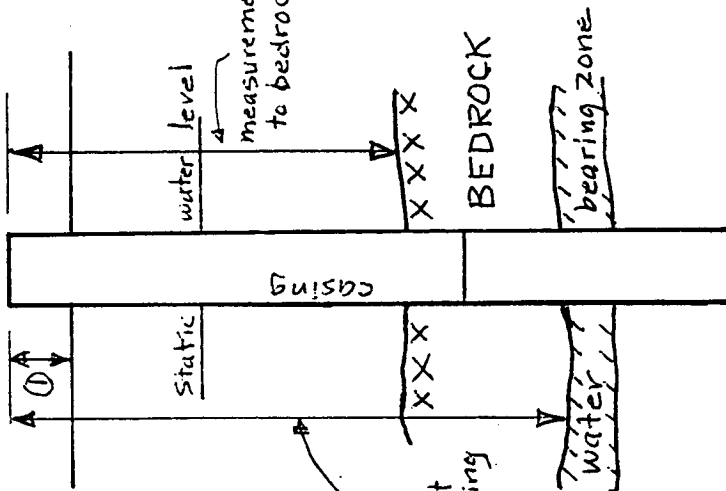
DIAGRAM ILLUSTRATING DOWN HOLE MEASUREMENTS FOR PRODUCTIVE AND NONPRODUCTIVE WELLS

PRODUCTIVE WELLS

DRILLED INTO
UNCONSOLIDATED
FORMATION

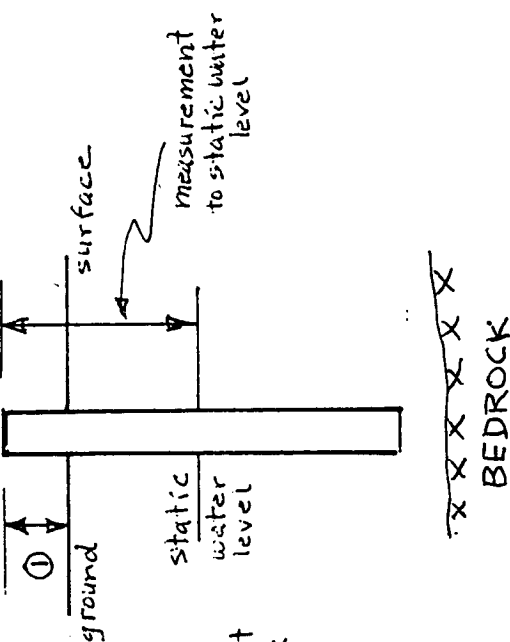


DRILLED INTO
CONSOLIDATED
FORMATION



NONPRODUCTIVE WELL

BORED/ DRILLED INTO
UNCONSOLIDATED
FORMATION



① length of casing above ground surface
(subtract from down hole measurements
to water bearing zone, bedrock, and
static water level)

WELL DATA

Total well depth: Depth is from land surface, not top of well casing (subtract height of casing above land surface from the total tape reading to well bottom). All well or water depth measurements are "DOWN THE HOLE", meaning the baseline (or zero point) is the ground surface. This is done to afford consistency in both recording and reporting all of the readings needed when using a tape or water level indicator.

Depth to bedrock: Record depth from land surface to bedrock (subtract height of casing above land surface from total measurement to bedrock).

Water bearing rock or unconsolidated material: Make notation on the color and texture of the rock at the water bearing zone. These two descriptors will allow a geologist to determine the type of rock or rock formation. Color is self explanatory--for texture, use descriptions such as soft or hard rock, fine or coarse-grained sand, shale, clay, or similar words without having to make a geologic judgement.

Water-bearing zones: Identify the depths (using "down hole measurement") at which these were encountered.

Gravel pack well: Provide diameter in inches for the gravel pack, if one is installed.

Screen: Self explanatory, to be filled in if a screen is used. Include screen diameter in inches, length, and slot size.

STATIC WATER LEVEL (*include on monitoring well reports*)

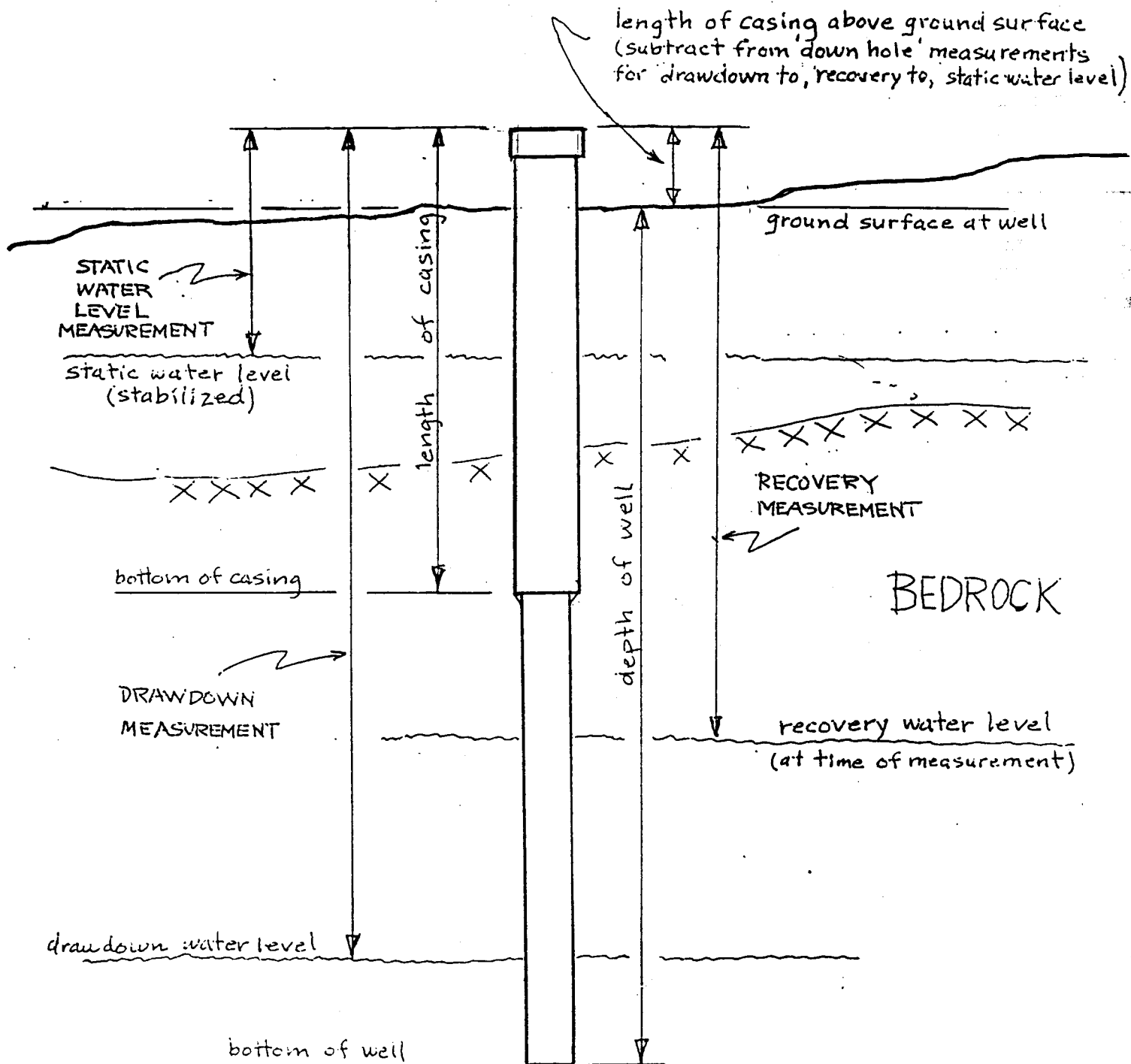
Measure after the well is completed and the water level has stabilized. Normally this takes about 24 hours to occur. Record depth of water level below ground surface. Use reading from tape, drop line, or water level indicator, and subtract from the reading the length of casing above ground surface.

WELL TEST (*omit on monitoring well reports*)

Well test data to be entered on the well completion report can be obtained either while drilling equipment is at the site or, if a pump is to be installed by the driller, at the time a pump test is conducted. Whatever test method is used, identify it on the report in the space provided (e.g., bailer, air lift, pump).

Measure *well yield* in gallons per minute, and record length of time which the test was conducted. Immediately upon test completion, determine *drawdown (to)* by measuring the depth of the water level below ground surface. Start by obtaining a tape or indicator reading from top of casing down to drawdown water level, then subtract from this reading

**DIAGRAM OF 'DOWN HOLE' MEASUREMENTS
TO RECORD VALUES FOR "DRAWDOWN TO",
"RECOVERY TO", AND "STATIC WATER LEVEL"**



the length of casing above ground surface ("down hole measurement"). This is not the net drawdown, as this will be calculated at a later date using the value obtained for static water level. Note that the word 'to' is implied and does not follow 'drawdown' on the well completion report form; this omission will be corrected in future printings. After an elapsed time of at least one hour from terminating drawdown, measure from top of casing to the surface of the returning water in the well, subtract from this reading the length of casing above ground surface, and record this water level as *recovery (to)*. Also record the elapsed time from drawdown termination to when the recovery reading is taken. Note that 'to' is implied, as it does not follow the word 'recovery' on the well completion report form; this omission will be corrected on future printings of the form. Until this printing change is made, write in the word 'to' after the word 'recovery'.

This method of recording drawdown and recovery data is designed to minimize both the amount of time your equipment is on-site after the drilling operation is finished, and any calculations you need to make after obtaining water level readings. Upon determining well yield, you can proceed to dismantle your equipment and move it. However, before leaving the site make sure you have taken the water level measurement for recovery and have recorded the time elapsed since terminating drawdown.

COMMENTS

A blank space is provided for you to note any unusual conditions or special circumstances about the well or the drilling operation. For instance, use of a Jaswell seal should be recorded. Note here if the well was hydrofractured (include the new well yield). On well abandonment or decommissioning, use this space to provide information on materials used. Refer to example.

LOG OF FORMATIONS

Information recorded in this section is from observations of: (1) samples of cuttings produced by the cutting bit, (2) materials from backwash operations, and (3) drilling time log records. You are not required to identify specific types of subsurface materials you encounter; rather, provide the kind of information which geologists can use in preparing subsurface analyses. Give us general descriptions using terms like topsoil, gravel, boulders, cobbles, coarse or fine sand, hardpan, clay, shale, ledge, and rock. If rock, record the color (e.g., gray, black, light brown, salt and pepper, white, pink) and texture (e. g., hard, medium, or soft).

DRILLER INFORMATION

The Massachusetts registered well driller who provides immediate field supervision must sign the form. The name used for the driller can be that of the registered well driller, or a

EXAMPLES: REPORTS FILED FOR NONPRODUCTIVE (MONITORING) WELLS

Department of Environmental Management/Division of Water Resources

WELL COMPLETION REPORT

WELL LOCATION Maine St
Address Maine St
City/Town Monson MA
Well owner Monson MA
Address Maine St
City/Town Monson MA
Board of Health permit obtained: yes ☒ no ☐

GEOGRAPHIC DESCRIPTION
30 N S E W of Maine St
4 N S E W of Bumpfield Rd
intersect. w/ road

WELL USE
Domestic ☐ Public ☐ Industrial ☐
Monitoring ☒ Other ASA

WELL DATA
Total well depth 20 ft.
Depth to bedrock 20 ft.
Water-bearing rock/unconsolidated material: gravel
Description gravel
Water-bearing zones:
1) From 0 To 20
2) From 0 To 20
3) From 0 To 20
Gravel pack well: dia.
Screen: dia. length 10 ft.
Slot # 10

Method drilled ASA
Date drilled 07-09-97
CASING PVC
Type PVC
Length 20 ft. Dia (I.D.) 2 in.
Length into bedrock 20 ft.
Protective well seal: Grout
Grout ☐ Other Grout

STATIC WATER LEVEL (all wells)
Static water level below land surface 11 ft. Date 07-09-97
WELL TEST (production wells)
Drawdown 11 ft. after pumping 11 min. at gpm
How measured Recovery 11 ft. after 11 min.

LOG of FORMATIONS
Materials From To
FILL 0 20
Gravel 0 20
Firm 0 20
Address 588 Sebec St
City/Town Monson MA
Supervising Driller Reg. # 578 M
Signature of supervising registered well driller Stanley Werbach

COMMENTS
3 Wells
SJ Werbach
Env. Compliance
588 Sebec St
Monson MA
578 M
Stanley Werbach

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Department of Environmental Management/Division of Water Resources

WELL COMPLETION REPORT

WELL LOCATION Main St
Address Main St
City/Town Grafton
Well owner Grafton
Address Worcester
City/Town Worcester
Board of Health permit obtained: yes ☐ no ☒

GEOGRAPHIC DESCRIPTION
100 N S E W of Main St
2 N S E W of Cross St
intersect. w/ road

WELL USE
Domestic ☐ Public ☐ Industrial ☐
Monitoring ☒ Other ASA

WELL DATA
Total well depth 40 ft.
Depth to bedrock 40 ft.
Water-bearing rock/unconsolidated material: MSCLUMS + G
Description MSCLUMS + G
Water-bearing zones:
1) From 8 To 40
2) From 8 To 40
3) From 8 To 40
Gravel pack well: dia.
Screen: dia. length 15 ft. from 25 to 40
Slot # 20

Method drilled ASA
Date drilled 8-4-97
CASING ASA
Type ASA
Length 20 ft. Dia (I.D.) 2 in.
Length into bedrock 20 ft.
Protective well seal: Grout
Grout ☐ Other Grout

STATIC WATER LEVEL (all wells)
Static water level below land surface 8 ft. Date 8-4-97
WELL TEST (production wells)
Drawdown 8 ft. after pumping 8 min. at gpm
How measured Recovery 8 ft. after 8 min.

LOG of FORMATIONS
Materials From To
FILL 0 6
Gravel 0 6
Firm 0 6
Address 308 Cedar Hill St
City/Town Marlboro
Supervising Driller Reg. # 693 M
Signature of supervising registered well driller Stanley Werbach

COMMENTS
Ray Necurio
Handex
308 Cedar Hill St
Marlboro
693 M
Stanley Werbach

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member of his crew who worked at the site under his supervision. Firm and Address is that of the company employing the registered well driller.

OTHER REPORTING REQUIREMENTS

Submitting the well completion report to the Department and the municipal board of health meets the requirement of the enabling state law. However, the board of health mostlikely will require you to furnish more detailed information in addition to this report. For example, you may need to furnish results from a water quality analysis so that the board can make a determination regarding issuance of a certificate of occupancy. Or, if you are also installing a well, the board probably will require you to provide results from a pump test. Complying with these additional board of health requirements is a condition to your being certified to engage in the business of drilling wells in Massachusetts.

EXAMPLE: REPORT FILED FOR WELL ABANDONMENT

Department of Environmental Management/Division of Water Resources		
ABANDONMENT WELL COMPLETION REPORT		
WELL LOCATION		
Address <u>Swamp Road</u>		
City/Town <u>West Stockbridge, MA</u>		
Well owner <u>Swamp Road, West Stockbridge</u>		
Address <u>Massachusetts 01266</u>		
Board of Health permit obtained: yes <input checked="" type="checkbox"/> no <input type="checkbox"/>		
GEOGRAPHIC DESCRIPTION		
40 N S E W of (feet) (circles) Swamp Road (road)		
28/10 N S E W of (mi. in center) (circles) intersect. w/ Route 102 (road)		
WELL USE		
Domestic <input checked="" type="checkbox"/> Public <input type="checkbox"/> Industrial <input type="checkbox"/>		
Monitoring <input type="checkbox"/> Other <input type="checkbox"/>		
Method drilled <u>mud rotary</u>		
Date drilled <u>9/7-9/9/93</u>		
CASING		
Type <u>no casing installed</u>		
Length <u>ft.</u> Dia (I.D.) <u>in.</u>		
Length into bedrock <u>ft.</u>		
Protective well seal: <u>grouted hole off with bentonite cement grout</u>		
Grout <input checked="" type="checkbox"/> Other <input type="checkbox"/>		
WELL DATA		
Total well depth <u>412</u> ft.		
Depth to bedrock <u>no consolidated rock found</u>		
Water-bearing rock/unconsolidated material: <u>no water found</u>		
Description <u>no water bearing rock</u>		
Water-bearing zones:		
1) From <u> </u> To <u> </u>		
2) From <u> </u> To <u> </u>		
3) From <u> </u> To <u> </u>		
Gravel pack well: dia. <u> </u>		
Screen: dia. <u> </u> to <u> </u>		
STATIC WATER LEVEL (all wells) <u>Owner decided to stop drilling and grouted borehole off.</u>		
WELL TEST (production wells) <u>NO FLOW WAS FOUND, NO CASING INSTALLED.</u>		
Drawdown <u> </u> ft. after pumping <u> </u> hr. <u> </u> min. at <u> </u> gpm		
How measured <u> </u> Recovery <u> </u> ft. after <u> </u> hr. <u> </u> min.		
LOG OF FORMATIONS		
Materials	From	To
WEATHERED	0'	
Limestone		412'
COMMENTS <u>OWNER DECIDED ON 9/9/93 the didnot want to continue drilling, hole was mudded to 412 ft, grouted hole with bentonite and cement. CARL CLSCHMIDT, JR.</u>		
Firm <u>HANSON WELL DRILLING & PUMP CO., INC.</u>		
Address <u>P. O. BOX 463</u>		
City/Town <u>NASSAU, NEW YORK 12123</u>		
Supervising Driller Reg. # <u>63</u>		
THOMAS F. HANSON VICE PRESIDENT		
<u>Thomas F. Hanson</u> Signature of supervising registered well driller		

Please print firmly

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W. Stockbridge
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